

REMARKS

Claims 1-8, 10, 11, 13-20, and 22-24 will be pending upon entry of the present amendment. Claims 1, 3, 6, 8, 10, 15, 16, and 18 are amended and claims 22-24 are newly submitted herewith. No new matter has been added with the present amendment.

Applicant thanks Examiners Bertheaud and Kramer for their consideration in conducting an interview with the undersigned representative on October 2, 2008. With regard to claim 1, the undersigned argued that the ball bearings 63 of the Wahlmark reference cannot be modified to become pistons as suggested in the Office Action, because such a modification would defeat their primary purpose as friction-reducing elements of the design (see Wahlmark, column 5, lines 3-7, and also MPEP § 2143.01 V (“[if a] proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification”)). The Examiner accepted this argument but argued that even unmodified, the ball bearings function as pistons when Wahlmark’s machine is first started, when the ball bearings are urged outwardly in their sockets along the inclined axes 115 (column 7, lines 22-30). It was agreed that language reciting pistons configured to “non-rotatably slide” on the reaction plate would distinguish claim 1 over the art of record.

With regard to claim 8, the undersigned argued that Wahlmark does not anticipate reaction plates, each having a “reaction surface in the shape of a section of a cylinder,” concentric to and facing the back plate. The Examiner disagreed, and argued that Wahlmark’s channels 64 were cylindrical. There was some discussion related to the definition of a cylinder, and the Examiner observed that, even if the structure could be defined in a way that would distinguish the claimed structure over the structure of Wahlmark, the Examiner would be inclined to reject the claim under U.S.C. § 103 because he believed that the referenced element of Wahlmark served the same function. Applicant respectfully disagrees, as will be discussed below in the response to the rejections.

Regarding claim 10, the Examiner suggested that the language added to claim 1 be considered to distinguish the claim over the art of record. Notwithstanding the Examiner’s suggestion, claim 10 has been amended so as to have a different scope and provide varied

protection for the invention. However, dependent claim 22 has been added to provide language similar to that added to claim 1.

Applicant also thanks the Examiner for indicating the allowability of the subject matter of claims 5, 13, and 14. New independent claim 24 includes subject matter similar to that of claim 13, and is believed allowable for the same reason.

Summary of Rejections Under 35 U.S.C. §§ 102 and 103

Claim 8 is rejected under 35 U.S.C. §102(b) as being anticipated by Whalmark (U.S. Patent 3,233,555); claims 1, 7, 16, and 18-19 are rejected under 35 U.S.C. §103(a) as being unpatentable over Whalmark; claims 2 and 20 are rejected under 35 U.S.C. §103(a) as being unpatentable over Whalmark, in view of Bratt (U.S. Patent 4,991,492); claims 3, 4, 6, 15, and 17 are rejected under 35 U.S.C. §103(a) as being unpatentable over Whalmark, in view of Forster (U.S. Patent 4,893,549); claim 10 is rejected under 35 U.S.C. §103(a) as being unpatentable over Whalmark in view Schauer (U.S. Patent 3,382,813); claim 11 is rejected under 35 U.S.C. §103(a) as being unpatentable over Whalmark in view of Schauer and Forster.

In the discussion that follows, when a specific passage of a U.S. patent is cited, it will be pinpointed by a column number separated from a line number by a colon, e.g., 4:22, indicating column 4, line 22.

Response to Rejections Under 35 U.S.C. § 102

Claim 8 recites, in part, “a back plate having a concave surface whose shape defines a section of a first cylinder ...; and first and second reaction plates coupled to the back plate, each having a convex reaction surface whose shape and position defines a respective section of a second cylinder, concentric to the first cylinder, the reaction surfaces of the first and second reaction plates substantially facing, and spaced a selected distance from, the concave surface of the back plate.” Wahlmark fails to anticipate these limitations of claim 8. In particular, Wahlmark fails to anticipate first and second reaction plates ..., each having a convex reaction surface whose shape and position defines a respective section of a second cylinder.” As this language makes clear, the reaction surfaces each define a respective portion of a same cylinder. An example of this can be seen in Figure 6A of the specification, which shows reaction

plates 130, each having a reaction surface 153. It can be seen that in their straight dimensions, these two surfaces are aligned such that they each define a section of a same cylindrical shape. Wahlmark has no structure that conforms to the language of claim 8. The Office Action points to Wahlmark's base surface 72 (i.e., "the curved surface of [the cap] 26") and channel 64 as corresponding, respectively, to the concave surface of the back plate and the convex reaction surface of a reaction plate of claim 8.

As best understood, the Examiner's argument is that, if Wahlmark's base surface 72 has a shape of a section of a cylinder – which Applicant accepts – and "if the channel 64 is curved to match the curved surface of [the base surface 72, it must therefore be] in the shape of a 'section of a cylinder,' due to it being curved like the side of a cylinder, and is obviously concentric to [the base surface 72.]" Applicant strongly disagrees. While there are many definitions of a cylinder, some more abstract than others, and more or less suitable for describing physical objects vs. mathematical concepts, they are in essence consistent. For the purposes of the present discussion, a cylinder can be defined as a circle lying in a plane, and the set of (straight) lines extending normal to the plane and intersecting a respective point on the circle. Thus, a cylinder always has a circular shape when viewed in one dimension, and straight, parallel sides when viewed in a transverse dimension.

In comparing Wahlmark's Figures 2 and 3, which show respective views that are transverse to each other, it can be seen that the surface 72 is arcuate in the dimension shown in Figure 2, i.e., it describes a portion of a circle in that view, while being straight as seen in the transverse view shown in Figure 3. Thus, the surface 72 does indeed define a section of a cylinder. However, the channel 64 is likewise curved as seen in Figure 2, but it is also curved as seen in Figure 3, and thus fails to define a section of a cylinder. The Examiner argues that "many elements could be considered to be 'in the shape of a cylinder', in fact, almost anything that has a curved outer surface could meet this description." Applicant again disagrees. As noted above, all definitions of a cylinder agree that a cylinder is circular in one dimension and straight in a transverse dimension. Any curved shape that does not meet these criteria cannot be said to be cylindrical. Furthermore, if the Examiner's reasoning were correct, *cylinder* would be a null term, and would contribute nothing to the claim. Applicant notes that the central purpose of a patent claim is to define an invention so that the public can reliably determine the bounds of

the patented subject matter. As the Examiner acknowledged in the recent interview, the task of concisely and unambiguously defining a structure, in language only, can be very difficult. If common, well understood terms are construed more broadly than is appropriate, or are negated as adding no meaning to a claim, the task becomes impossible. Accordingly, for the purpose of defining claim 8, Applicant respectfully requests that the term *cylinder* be afforded the meaning provided above.

Finally, as currently presented, claim 8 recites, with respect to the reaction plates, that each has “a convex reaction surface whose shape and position defines a respective section of a second cylinder, *concentric to the first cylinder.*” Wahlmark’s channel 64 does not have a convex surface that defines a section of a cylinder that is concentric to the surface 72.

For all the reasons outlined above, Wahlmark does not anticipate all the limitations of claim 8, which is therefore allowable.

Applicant notes, with regard to the function of Wahlmark’s channel 64, that it is shaped and positioned primarily to receive the ball bearings 63 to reduce friction as the port plate 62 rotates over the base surface 72, and thus supports forces that are substantially lateral. The greatest of these forces will be torque exerted by the device (5:66, *et seq.*), which is fully lateral in nature. It is only during initial startup that the ball bearings are required to help “seat” the port plate 62 against the base plate 26 (7:25-30). Thus, the channel 64 is never subjected to the lifting forces of the port plate – which are axial, i.e., straight up, as viewed in Figure 3 – and is therefore not designed to withstand such forces. It can be seen, in Figure 3, that no portion of the channel 64 actually extends over the bearings as far as their vertical center lines, and the portion that does extend upward is very thin, and clearly not intended to withstand significant axial loads. Wahlmark is explicit in explaining that the downward force exerted by the cylinder barrel 100 is greater than the separation force of the plate 72 (6:62-7:7), and so does not contemplate any requirement to support axial loads. For the reasons outlined, Wahlmark has no need for, nor would it benefit from reaction surfaces whose shape and position define respective sections of a second cylinder, concentric to the base surface. Such surfaces would appear, in Wahlmark’s Figure 3, as lying parallel to the base surface 72, which would be particularly useless in supporting lateral loads like those discussed in Wahlmark.

Response to Rejections Under 35 U.S.C. § 103

Because the language of claim 1 was discussed and agreed upon in the interview, its rejection in the Office Action is moot, and will not be addressed.

Claim 18 recites that “at least one of the plurality of hold-down pistons has a diameter that is smaller than another of the hold-down pistons.” The Examiner argues that “it “would have been an obvious matter of design choice to make the hold down pistons different diameters in order to have them distribute more or less pressure to the system.” Applicant strongly disagrees. Wahlmark is silent regarding any reason why one would care to distribute more or less pressure to the system at one piston than at another. The Examiner cites *In re Rose* (220 F.2d 459, 105 USPQ 237 (1955)) to support this position, stating that “a change in size is generally recognized as being within the level of ordinary skill in the art.” However, *Rose* is inapposite to the present case, and the conclusion drawn is inadequate to support a *prima facie* case of obviousness.

In *Rose*, the claims were directed to a bundle of lumber, and the limitation in question recited that the bundle “is of appreciable size and weight so as to require handling by a lift truck.” The court noted that the “number of strips in a bundle, the number of bundles in a layer, the number of layers of bundles and the relative dimensions of the strips, the bundles and the package are all deemed matters of choice involving differences in degree and/or size and (are) not patentable distinctions.” (*Id.*, at 463.) In other words, the choices listed, in that particular case, were quantitative differences, not qualitative differences. The MPEP indicates that the question is whether a device will “perform differently.” (MPEP § 2144.04 IV A., in summary of *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (1984).) The Examiner acknowledges that a larger piston will perform differently: it will apply more force, but fails to point to any teaching in the prior art where such a feature is beneficial. In contrast, the present application explains that in some embodiments, the clamping force applied by the barrel is off-center, meaning that the lifting forces are unbalanced, and provides larger pistons to offset the greater lifting forces at one end (see Figure 9 and page 11, lines 19, *et seq.*). Wahlmark indicates that where the displacement control unit is offset, creating an unbalance in torque – *not* lifting force, a counter-clockwise torque is imparted when displacement is increased, which increases the load on the lead ball bearings 63a. To offset this, high-pressure

fluid can be provided to these bearings. However, Wahlmark also indicates that in such a case, “it is essential” that the lagging bearings 63b also be provided with the same high-pressure fluid, because the torque will be reversed when the displacement is decreased (6:1-19). Thus, Wahlmark teaches away from distributing more or less pressure at one bearing (or piston) than at another. Claim 18 is clearly allowable over Wahlmark.

Claim 3 has been placed in independent form, and recites, in part, “a plurality of hold-down pistons distributed along first and second edges of a same surface of the valve plate in respective hold-down cylinders formed in the valve plate.” A combination of Wahlmark and Forster fail to teach or suggest this limitation of claim 3. As noted above, the Examiner accepted Applicant’s argument that Wahlmark’s ball bearings cannot be modified to become pistons without destroying their functionality as ball bearings. If they cannot rotate, they cannot function as ball bearings. Furthermore, Wahlmark’s port plate 62 “is mounted for travel on [the] ball bearings 62 in [the] channel 64,” the bearings being positioned at the *sides* of the port plate (5:13-16) for the obvious reason that they cannot properly function otherwise. If they were positioned “along first and second edges of a same surface” of the port plate, they would be incapable of acting to carry the port plate or reduce friction. For these reasons, Forster cannot be combined with Wahlmark to teach the limitations of claim 3, which is therefore allowable.

Claim 6 recites that “each of the plurality of hold-down pistons comprises an aperture passing along a central axis from a first surface to a second surface thereof.” Claim 15 recites that “a central axis of hold-down cylinders formed in a first side of the valve plate lie in a first plane that is substantially perpendicular to the surface of the valve plate, and a central axis of hold-down cylinders formed in a second side of the valve plate lie in a second plane that is substantially perpendicular to the surface of the valve plate and parallel to the first plane.” Claim 17 recites that “each of the plurality of hold-down pistons comprises a fluid passage extending along a central axis thereof from a cylinder end to the face of the respective piston.” Claims 6, 15, and 17 are allowable for reasons similar to those outlined in support of the allowability of claim 3.

Claim 10 recites, in part, “changing the displacement of the machine by sliding the valve plate in an arc along a surface of the back plate; and biasing a plurality of hold-down pistons along respective axes lying normal to the arc, against a reaction plate coupled to the back

plate.” Wahlmark cannot teach or suggest biasing a hold-down piston along an axis lying normal to the arc, because this would be exactly perpendicular to the torque applied to its port plate, for which it provides the ball bearings. Schaure, cited in combination with Wahlmark in rejecting claim 10, does not alter Wahlmark’s teaching in this regard. Claim 10 is therefore allowable over Wahlmark and Schaure.

New claim 23 recites, in part, “a plurality of hold-down pistons positioned in respective ones of the hold-down cylinders, each of the hold-down pistons configured to be biased, by pressurized fluid in the respective hold-down cylinder, against a surface of one of the reaction plates, the valve plate and cylinder barrel configured such that a net lifting force of the valve plate and cylinder barrel, exclusive of forces generated in the hold-down cylinders, is positive.” Wahlmark teaches away from a positive net lifting force (6:59 to 7:15, 10:50-62), and therefore fails to teach or suggest these limitations, and, further, because it teaches away, it cannot be combined with any other reference that might otherwise provide such a teaching.

Support for claim 23 can be found in the specification beginning, for example, at page 9, line 22.

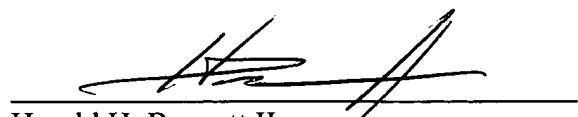
Conclusion

In light of the above amendments and remarks, Applicant respectfully submits that all pending claims are allowable, and therefore respectfully requests that the Examiner reconsider this application and timely allow all pending claims. Examiner Bertheaud is encouraged to contact Mr. Bennett by telephone at (206) 694-4848 to discuss the above and any other distinctions between the claims and the applied references, if desired. If the Examiner notes any informalities in the claims, he is encouraged to contact Mr. Bennett by telephone to expeditiously correct such informalities.

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The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

Respectfully submitted,
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